



# **HIT to Support the Advanced Medical Home**

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**GEISINGER**  
REDEFINING BOUNDARIES™

# Geisinger

- 14 clinics, 3 hospitals, 31 counties
- 200,000 lives
- 100% outpatient EHR
- 100% inpatient EHR (large hospital)
- Patient EHR – 100,000 patients
- Outreach EHR – 500,000 records yearly
- Information Exchange – 10 organizations

# Agenda

- The Goal of HIT
- End-to-End Care Processes
- Precisely Informed Actors
- Transparent Reporting

# The Goal of HIT

To support the flawless performance of a PCP-and-patient-led (virtual) team that manages all of a patient's health needs (and information) across every setting of care.

# The Reality

- Discharge plans unclear, un-scheduled.
  - Follow-up plan incomplete.
  - Follow-up appointments unavailable.
- Medication problems at transitions of care:
  - Discharge meds added to home meds (creating duplicates)
  - Patients too confused to fill prescriptions.
  - Delay for PCP confirmation of discharge meds (e.g., antibiotics post-pneumonia)

# Agenda

- The Goal of HIT
- End-to-End Care Processes
  - Supported by end-to-end HIT.

# The Healthcare Team (Actors)

- Patient
- Doctor
- Nurse
- Caregiver
- Call Center
- Scheduler
- Clinical Educator
- Case Manager
- Health Coach
- Payer
- Quality Manager
- Regulator

# End-to-End HIT

- Automate identification of patient needs and care-plan status.
  - Population screening and risk stratification
  - Care reminders
  - Disease-specific patient summaries

# End-to-End HIT

- Automate identification of patient needs and care-plan status.
- Automate patient engagement.
  - Personalized invitations to care
  - Personalized updates at check-out

# End-to-End HIT

- Automate identification of patient needs and care-plan status.
- Automate patient engagement.
- **Standardize clinic processes.**
  - EHR rooming tool
  - Protocol-based order sets
  - Med reconciliation

# End-to-End HIT

- Automate identification of patient needs and care-plan status.
- Automate patient engagement.
- Standardize clinic processes.
- Automate remediation of sub-optimal care.
  - EHR alerts (linked to)
  - Standardized order sets

# Continuously Optimized HIT

- Pre-implementation process re-design

# Continuously Optimized HIT

- Pre-implementation process re-design
- Continuing optimization
  - Processes
  - EHR
  - Team members

# Continuously Optimized HIT

- Pre-implementation process re-design
- Continuing optimization
- Every loop closed
  - Tests
  - Prescriptions
  - Referrals
  - Discharges

# Agenda

- The Goal of HIT
- End-to-End Care Processes
- **Precisely Informed Actors**
  - Data Capture
  - Data Movement
  - Action Support
  - Patient EHR
  - Data-Response Center

# Precisely Informed Actors

- Data Capture

# Data Capture (patients and clinicians)

“The patient notes new low-back pain.

There is no personal history of cancer, trauma, or long-term steroid use. The patient has noted no fever, unexplained weight loss, urinary retention, saddle anesthesia, fecal incontinence, sciatica, or bone pain.

The breasts are normal. {LBP PROSTATE:9363} There is no spinal tenderness to percussion. Both ipsilateral straight-leg raising and crossed straight-leg raising are negative. There is no ankle-dorsiflexion nor great-toe extensor weakness.”

# Care Management Pre-Admit Evaluation

Epic Hyperspace - LOCUST COURT - Epic Stress - 11-2007 copy - KARLA (SYS-SUPPORT) LEIBY

Desktop Action Options Charge Router Reg/ADT CRM/CM Referrals Reports Report Mgmt Tools Admin Help

Record Viewer Back Forward Home Sched In Basket Review Encounter Tel Enc Hospital Chart Pt Lists Secure/Stay Print Secure

Home Zdanville, Womantwo

**Zdanville, Womantwo\*** Age Sex DOB MRN Allergies PCP Alert INS MyGeisinger  
 65 yea F 12/12/1942 Z40000065 Codeine, Sulfa, Rice Bean, Fruit\* TEST MD, SU\* HM, Alert (None) Sign Up

**Questionnaires** [Close X]

**Current Questionnaires**

CARE MGMT PRE-ADMIT ASSESSMENT [110500]

Add [ ] ... Remove Restore

Adv	Question	Answer	Comment
	CARE MGMT PRE-ADMIT ASSESSMENT		
✓	Anticipated LOS: DO YOU HAVE?		
✓	Adequate prescription plan?		
✓	Computer at home that you use?		
✓	MyGeisinger?		
✓	Power of Attorney (POA) or Advanced Directives?		
✓	Do you live:		
✓	Employment?		
✓	Caregiver arrangements for return home?		
✓	Who needs to be taught how to assist in your care?		
✓	In general would you say your health is?		
✓	Adult children in the area?		
✓	Is there anyone who could call you everyday for a while once home?		
✓	Is there anyone who could assist with getting		

KARLA (SYS-SUPPORT) ... Staff Message, Results, Open Charts, Encounters, Addendum 5:41 PM



# Social Services Needs Evaluation

Epic Hyperspace - LOCUST COURT - New Development12-2007 - KARLA (SYS-SUPPORT) LEIBY

Desktop Action Options Charge Router Reg/ADT CRM/CM Referrals Reports Report Mgmt Tools Admin Help

Record Viewer Back Forward Home Sched In Basket Review Encounter Tel Enc Hospital Chart Pt Lists Secure/Stay Print Secure

Home **Zambtest,Womanseven** Epic

**Zambtest, Womanse\*** Age Sex DOB MRN Allergies PCP Alert INS MyGeisinger  
 67 yea F 1/11/1941 5332882 Not on File DEVINE SYS-S\* HM, AlertMID PENN IN\* Sign Up

Chart Review  
 SnapShot  
 Results Review  
 Flowsheets  
 Graphs  
 Problem List  
 History  
 Letters  
 Demographics  
 EMPI Demogra...  
 MPI History  
**Doc Flowse...**  
 Growth Chart  
 Allergies  
 Medications  
 Order Entry  
 Enter/Edit Resul...  
 Imm/Injections  
 Communication  
 Pt. Handouts  
 NDP Form  
 Visit Navigator  
 Hotkey List  
 Exit Workspace

**Doc Flowsheets** Resize

File Add Row Add Group Add LDA Cascade Add Col Insert Col Compact Last Filed Graph Details Go to Date Values By More

Flowsheet: HIGH RISK CARE/S ... Encounter Vitals Medical Risk Screening Pilot TOC Surgical Risk Screening Pilot TOC

Value	Comment	Time Taken	Time Recd	User Taken	User Recd	Show Audit	File
05/09/08							
1700							
<b>Environmentals</b>							
Data Source							
Care Manager							
If PT/OT evaluation not completed, verify when it							
Type of living quarters							
Number of steps to enter living quarters:							
How many stories is the dwelling?							
Location of the bathroom:							
Functional Status prior to admission							
Lives (with)							
Assisted Living Facility							
Skilled Nursing Facility Bed Hold Confirmed							
Skilled Nursing Facility							
Dialysis							
<b>Previous Community Agency Involvement and Support</b>							
Previous Community Agency Involvement							
Home Health							
Hospice Agency							
Home Infusion Company							

KARLA (SYS-SUPPORT)... Open Charts 5:34 PM



# Physician Discharge Checklist

Epic Hyperspace - LOCUST COURT - New Development 12-2007 - KARLA (SYS-SUPPORT) LEIBY

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**Doc Flowsheets** Results Review Flowsheets Graphs Problem List History Letters Demographics EMPI Demogra... MPI History **Doc Flowshe...** Growth Chart Allergies Medications Order Entry Enter/Edit Resul... Imm/Injections Communication Pt. Handouts NDP Form Visit Navigator

File Add Row Add Group Add LDA Cascade Add Col Insert Col Compact Last Filed Graph Details Go to Date Values By More

Flowsheet: **PHYSICIAN TRANSI** Encounter Vitals Medical Risk Screening Pilot TOC Surgical Risk Screening Pilot TOC

PHYSICIAN TRANSITIO...	<input checked="" type="checkbox"/>		05/09/08	
On Admission	<input checked="" type="checkbox"/>		1700	
<b>Day of Discharge</b>	<input checked="" type="checkbox"/>		<b>On Admission</b>	
Complete Medication Reconciliation			<b>Day of Discharge</b>	
Complete Medication Reconciliation				
Complete Discharge Instruction / Prescription Record				
Complete discharge summary				

Value Comment Time Taken Time Recd User Taken User Recd Show Audit File

KARLA (SYS-SUPPORT)... Open Charts 5:53 PM

# Post-Discharge Alert (case manager)

Questionnaire for ACUTE [22]

Question	Answer
GHS ACTIVE CASE MANAGEMENT - 200020	
The patient is enrolled in ACTIVE CASE MANAGEMENT.	Yes
Is this a Hospitalization or Emergency Room follow up?	!
PATIENT MUST BE SCHEDULED IN WITHIN 7 DAYS OF DISCHARGE DATE	
What date was the patient discharged?	!

Custom List

Accept Cancel

# Data Capture

Questionnaire for ACUTE [22]

Question	Answer
GHS ACTIVE CASE MANAGEMENT - 200020	
The patient is enrolled in ACTIVE CASE MANAGEMENT.	Yes
Is this a Hospitalization or Emergency Room follow up?	 ...

PATIENT MUST

What date was

Answer Select

Type to match Answer:

Select answer from list:

Answer	Number
Hospitalization	1
Emergency Room	2

2 items loaded.

Accept Cancel

Custom List

Accept Cancel

# Precisely Informed Actors

- Data Capture
- Data Movement

# Data Movement

- Scanned Documents
  - Electronic management
- Hand Entry
- Information Exchange
  - EHR access
  - Scanned documents
  - Machine-readable data (LOINC)

# Precisely Informed Actors

- Data Capture
- Data Movement

# Data Presentation

Problem List			
Status	Trend	Score	
			CHF, Stage 2
			HTN
			CKD, Stage 3
			Diabetes Type 2, with Nephropathy
			Acute UTI

# Precisely Informed Actors

- Data Capture
- Data Movement
- Action Support

# Action Support

- Diagnoses linked to care plans
- Order Sets linked to diagnoses and care plans
- Patient instructions linked to order sets

# Order Sets and Patient Communications

**Step Four:**

**F  
A  
S  
T  
F  
A**

A. Click on Green Plus Sign to Add to Your Favorites (only once)

B. Choose the Rescue Medication.  
*Optional:* HISTORICAL Meds available (uncheck defaulted med)

C. Right Click on COPD Rescue Pt Instructions, complete open variables using F2 Button.

D. Click on F2 Button

E. Click on Accept/Pend Button to exit smartset.

**COPD Patient Instructions Example – go to Pt Handouts and Pt Instructions to Print at your location.**

DATE  
PATIENT NAME  
PATIENT ADDRESS  
Dear Mr./Mrs. XXXXX:  
Your provider has ordered medications to treat your symptoms of respiratory infection. The...

# Action Support

- Diagnoses linked to care plans
- Order Sets linked to diagnoses and care plans
- Patient instructions linked to order sets
- **Pre-Filled Referrals**
- **Direct-to-patient reminders linked to self-scheduling**

# PHR: Data Access

- Problem List
- Med List
- Tests
- Visit review
- Prevention
- Chronic-Disease Management
- Case Management

# PHR: Communications

- Appointment Requests
- Secure e-Mail with
  - Providers
  - Case Managers

# PHR: Self-Service

- Medication Renewals
- Self-Scheduling (appointments, shots, tests)
- eVisits and other data input
- Referral requests

# Precisely Informed Actors

- Data Capture
- Data Movement
- Action Support
  
- Data-Response Center

# A Flood of Incoming Data

- Lab results
- Radiology results
- Patient input (depression scale)
- Monitor input
- Pharmacy input
- Case Manager input

# Data-Response Center - Actors

- Business-Process Management software
- Call Center
- Schedulers
- Clinical Educators
- Nurses
- Case Managers (high-risk patients)
- Physicians

# Data That Prompts a Response

- Discharge (transition of care)

# Transitions of Care

- ED Discharge
  - PCP communication
  - Home-health referral
- Hospital
  - Early post-discharge patient monitoring
  - PCP communication

# Data That Prompts a Response

- Transitions of care
- No result
  - Call Center invitation
  - Clinical Educator
  - Physician discussion

# Data That Prompts a Response

- Transitions of care
- No result
- **On-target result**
  - Normal mammogram letter.

# Data That Prompts a Response

- Transitions of care
- No result
- On-target result
- **Off-target result**
  - Breast Clinic contacts patient within 24 hours.

# Levels of Automation

- The software activates a protocol
  - without notifying a human.
  - and notifies a human.
  - which allows a human a restricted time to veto it.
  - contingent on a human's approval.
- The software suggests one action (among many options) for human approval.
- The software narrows the options to a few.
- The software offers a full set of options.
- The software presents data clearly, but offers no other assistance.

# Agenda

- The Goal of HIT
- End-to-End Care Processes
- Precisely Informed Actors
- **Transparent Reporting**

# Transparent Reporting

- To Patients
  - Reminders
  - Updates (e.g., depression status)
  - After-Visit Summaries
- To Providers (by variance)
- To Managers (by variance)
- To Payers, Regulators, Public Health

# Implications

- Providers will want to buy “medical-home systems”, not EHRs *per se*.



GEISINGER  
Redefining Boundaries<sup>SM</sup>